

Influence of Resistance Training on Designated Bio-motor Fitness Among Volleyball Players in Tribal Students

Kumaresan S.^{1*} & Dr. J. James²

¹Research Scholar, ²Assistant Professor, ^{1,2}YMCA College of Physical Education, Chennai, India.
Corresponding Author (Kumaresan S.) Email: kumarez89@gmail.com*



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ABSTRACT

The purpose of the study was to find out the influence of Resistance training on designated bio-motor fitness among volleyball players in tribal students. Total 15 tribal students school volleyball players were taken as subjects randomly for the study. All the subjects were selected by their respective from Tirupattur District, Tamilnadu and age group between 15 and 17. The study was formulated as a single group design consisting of a pre-test and post-test. The groups were assigned as experimental group (Resistance training) respectively. Pre-tests were conducted for all 15 subjects on selected bio-motor fitness variables. After the experimental period of twelve weeks' post-tests were conducted and the scores were recorded. The subjects were tested on bio-motor fitness variables such as Speed, Flexibility and Agility. Post-test was conducted after twelve weeks of training Pre and Post-test data were analyzed by applying Mean, SD and Paired samples 't' test. The level of confidence is fixed at 0.05 levels as the number of subjects was limited. The training effects of Resistance practices evidenced significant influence over the bio-motor fitness-related variables of volleyball players in tribal students, Tirupattur District.

Keywords: Resistance training; Bio-motor; Tribal; Volleyball player; Speed; Flexibility; Agility; T-test.

1. Introduction

Resistance training is an effective organizational form of doing physical exercises for improving all physical fitness components. Before and after training, the initial and final tests were conducted for the variables such as speed agility, power, coordination, static balance and dynamic balance for the experimental and control groups.

Resistance training is an exercise program that develops overall fitness. Resistance training is an effective and quick way to fit our workout into our busy day. Resistance training provides a high-intensity cardio workout, along with resistance training. This is designed to target fat loss and lean muscle building. A Resistance is designed with a series of exercises performed in succession of each other. When one Resistance is complete, we start these quinces over again with little to no break. To start we want to perform each exercise for 10 reps and 3 times through each Resistance. Remember to perform reps quickly and keep breaks as short as possible. The purpose of Resistance training is to keep moving, which pushes our body aerobically, while still challenging our strength.

2. Review of Related literature

(Suresh et al., 2021) focused on the effects of SAQ (speed, agility, and quickness) training and resistance training on the physical and skill performance of tribal football players. The research is significant as it addresses the need for specialised training programmes tailored to the unique requirements of tribal athletes. The study provides background on the importance of strength training in various sports such as football, wrestling, rugby, track and field, rowing, lacrosse, basketball, and hockey.

(Yang, 2022) The rapid development of competitive sports in the world requires volleyball players not just sufficient physical fitness but also the ability to understand and learn advanced techniques and tactics. In response

to the increasing pace of competitive sports, research on fatigue injuries in volleyball players must be deepened and expanded, making coaches and players aware of sports injuries and their means of prevention.

(Çelik, 2017) This study aims to examine the acute effects of cyclic stretching versus static stretching on the shoulder flexibility, rotator cuff muscle strength, spike speed, and spike hit rate on target in adolescent volleyball players, our study results suggest that cyclic stretching may be beneficial, as it increases both the shoulder flexibility and strength of young female volleyball players. In terms of volleyball performance, it cannot be declared both cyclic stretching and static stretching have any effect.

(Jamshidi et al., 2016) The main purpose of this study was to evaluate the effects of warm-up on the anaerobic power, agility, speed, flexibility and fatigue index of elite female volleyball players. Combined warm-up with vibration increases blood flow to active muscles and nerve receptors and increases the speed of nerve impulses.

(Nayak & Singh 2021) mentioned in their study that tribal volleyball players are very strong in speed, agility, cardiorespiratory endurance, and flexibility.

(Suresh & Kavitha Shiri 2021) stated that physical exercise specialized in the use of resistance training to enhance the muscular contractions that increase the strength of agility and endurance.

3. Hypotheses

For the purpose of the present investigation, the following hypotheses were formulated for this study.

1. It was hypothesized that there would not be any significant difference in Speed among tribal students' school volleyball players.
2. It was hypothesized that there would not be any significant difference in Flexibility among tribal student's school volleyball players.
3. It was hypothesized that there would not be any significant difference in Agility among tribal student's school volleyball players.

4. Limitations

1. The heterogeneous characters of the subjects in hereditary and environmental factors were recognized as limitations.
2. The disparity prevailing in the internal and external factors which could have discouraged or motivated the subjects during training as well as testing period couldn't be controlled.
3. The uncontrollable changes in climatic conditions such as atmospheric temperature, humidity, and other meteorological factors during the pre and post-tests were considered as limitations.
4. The quantum of physical exertion, lifestyle and physiological stress and other factors that affect the metabolic functions were also considered as limitations.

5. Delimitations

The study was delimited in terms of sample and contents as follows:

1. The age of the subjects ranged between 15 and 17. All of them were tribal students school volleyball players.
2. Single group design (Resistance Training).
3. The criterion variables selected for the study were confined to the following variables.

Bio-motor Fitness Variables

- i. Speed
- ii. Flexibility
- iii. Agility

- a. The Duration of the Training was for 12 Weeks.
- b. The number of sessions per week varied from 5 to 6.
- c. During the experimentation the testing periods were restricted to 'pre' and 'post'.

In this study, the following variables were selected:

Table 1. Criterion Variables and Independent Variables

Criterion Variables	Independent Variables
<ul style="list-style-type: none"> • Speed • Flexibility • Agility 	<ul style="list-style-type: none"> • 12 weeks of Resistance Training

The mental side of cricket is what separates the best players from the rest. Technical, tactical, and physical preparation are important for top-class performances but it is often what happens inside a player's mind that is the difference between success and failure. Whether batting, bowling, or fielding, a player's psychological strength has been identified by coaches, players, and commentators as a critical ingredient for winning cricket matches.

6. Methodology

6.1. Selection of the subjects

The purpose of the study was to find out influence of Resistance training on designated bio-motor fitness among volleyball players in tribal students. To achieve the purpose of the study 15 tribal students school volleyball players in the age group of 15 and 17 years were single group design consisting of a pre-test and post-test.

The groups were assigned as experimental group – (Resistance Training) respectively. Pre-tests were conducted for all the 15 subjects on selected bio-motor variables. After the experimental period of twelve weeks' post-tests were conducted and the scores were recorded.

The subjects were given respective training to the subjects five days a week Monday to Friday except Saturdays and Sundays from 6.30 to 7.30 a.m.

6.2. Training Programme

Six-week Resistance training schedule for tribal students' school volleyball players.

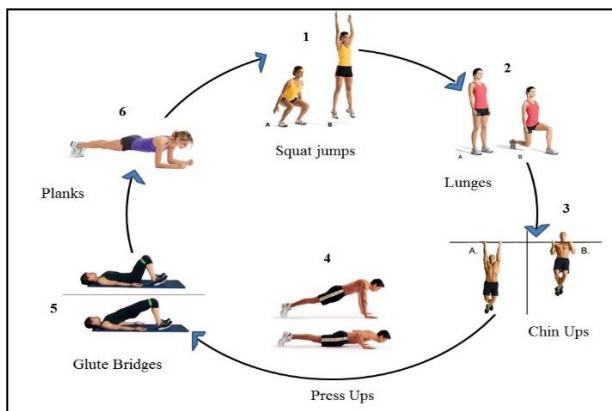


Figure 1. Tribal students school volleyball players Resistance

The training program is designed for 60 minutes per session in a day, three days in weeks for a period of six weeks' duration these 60 minutes include 10 minutes warm up and 10 minutes warm down remaining 40 minutes are allotted for the Resistance training program. Every two weeks 10% intensity is increased from 50% to 60% of work load. The training load is increased from the maximum working capacity of the subjects. This gives each group of muscles enough rest; the following Resistance training is done on Monday, Wednesday and Friday (Tuesday, Thursday, Saturday and Sunday have rest).

Power: Squat jumps, Knee dominant: Lunges, pulling: Chin Ups, Pushing: Press Ups, Hip Dominant: Glute Bridges, Core: Planks.

Table 2. Resistance training

Day	Workout			Resistances	
	Resistance training	Duration	Rest	Numbers	Rest
Monday	Each station (1-6)	30 seconds	30 seconds	2-3	1 minute
Wednesday	Each station (1-6)	30 seconds	30 seconds	2-3	1 minute
Friday	Each station (1-6)	30 seconds	30 seconds	2-3	1 minute

6.3. Tool and Technique

Table 3. Variables, Tests/Tools and the Unit of Measurement

S.No.	Variable	Test/tools	Unit of Measurement
1	Speed	50 Meter Dash	Seconds
2	Flexibility	Sit and Reach	Centimeters
3	Agility	Illinois Agility Test	Seconds

7. Results and Discussions

The following statistical techniques were used to find out the influence of Resistance training on designated bio-motor fitness among volleyball players in tribal students.

For the purpose of finding out any significant change in the variables due to training the data collected will be analyzed statistically using the SPSS statistical package. After eliminating the influence of Pre-test, the adjusted post-test means of single group will be tested for significance using Mean, SD and Paired samples 't' test. The level of confidence is fixed at 0.05 levels as the number of subjects was limited.

7.1. Computation of Paired Samples T-Test on Volleyball Players in Tribal Students

Table 4. Paired Samples T-Test

Variable	Pre-test		Post-test		Mean Deviation	SEM	t-ratio
	Mean	SD	Mean	SD			
Speed	6.23	0.22	6.09	0.20	0.14	0.03	5.41*
Flexibility	0.29	1.64	0.75	0.93	1.04	0.28	3.66*
Agility	19.34	0.86	17.30	0.61	2.04	0.18	11.10*

*Significant at 14 df at 0.05 level 1.761

Table 4 reveals the obtained t-ratio between pre and post-test values of Resistance training groups on bio-motor fitness constituent of speed, endurance, flexibility and agility. The pre-test mean values of speed are 6.23, endurance 2370, flexibility 0.29 and agility 19.34 respectively. The post-test means value of speed 6.09, endurance 2420, flexibility 0.75 and agility 17.30 respectively. The obtained t-values of Resistance training Group for speed 5.41, endurance 5.92, flexibility 3.66 and agility 11.10 respectively. The required table value was 1.761. Since the obtained t-ratios are greater than the required table value at 0.05 level of confidence It was observed that the mean gains were statistically significant resulting in twelve weeks' practice of Resistance training showed positive signs as having the significant improvement in speed, endurance, flexibility and agility. Hence this proved that there was a significant difference in speed, endurance, flexibility and agility among volleyball players in tribal students. The mean value on speed, endurance, flexibility and agility was presented through a bar diagram for a better understanding of the results of this study in Figure 2.

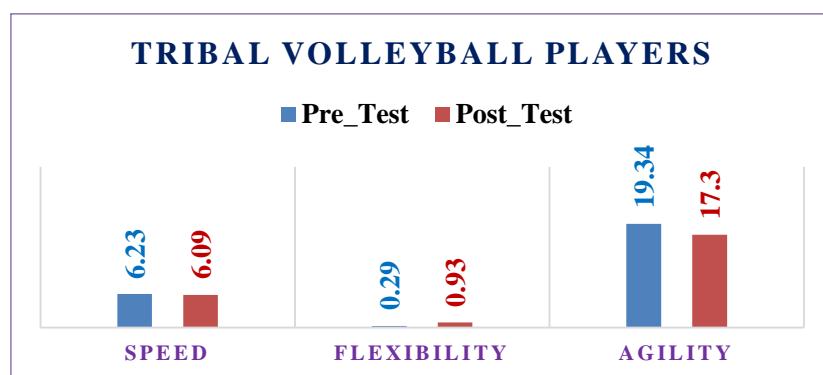


Figure 2. Mean value of Speed, Flexibility and Agility on Volleyball Players in Tribal students

8. Conclusions

1. The exercises prepared by the researcher according to resistance training positively affected the development of Body fat, which was decreased and endurance was significantly increased among tribal high school students' volleyball players.
2. The enhancement of anthropometric body mass index by using resistance training had a positive impact on the experimental group.
3. The training has a positive effect on the enhancement of range body mass index and adapting nature.
4. Within the limitations, the results of the present study seem to permit the following conclusion on volleyball players in tribal students.
5. The training effects of Resistance practices evidenced significant influence over the bio-motor fitness-related variables of volleyball players in tribal students from Tirupattur District, Tamilnadu.

Declarations

Source of Funding

The study has not received any funds from any organization.

Competing Interests Statement

The authors have declared no competing interests.

Consent for Publication

The authors declare that they consented to the publication of this study.

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